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1.

2. The Tomsk Railroad has two closed routes over which the movement of freight is made, primarily coal, iron ore, zinc ore and pig iron. One closed route is from Kuznetskiy to Magnitogorsk and the other is from Kemerovo to Magnitogorsk. The Trans-Siberian main line runs east and west from Novosibirsk-Taiga-Marinsk in the direction of Irkutsk. It is double track.

3. From Tomsk to Taiga it is single track. Lumber is brought in from the north, loaded on at Tomsk, and shipped to Taiga for transportation east and west.

4. The line from Tomsk to Belovo is single track. The following signal and safety precautions are used on this line:

a) There are signal stations approximately 8-12 kilometers apart on this line.
b) At each signal station there are from three to four sidings. The length of each of these sidings does not exceed 750 meters.
c) All switches on this line are hand operated.
d) The signal stations maintain communication with each other by means of low current telegraphic apparatus which transmits through the rails.
e) There are hand-operated semaphore signals at each of the sidings at each signal station.
f) Another safety measure is called the "rod system" /prut sistema/. This consists of metal pegs in a rack at each signal station. Every engineer passing a signal station must stop and pick up a peg before proceeding.
The signal station must telegraph ahead to the next signal station and
g) receive permission before allowing the engineer to remove the metal peg and to proceed.

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5. For example, a train is to go from Tomsk south to Belovo:

a) The engineer receives clearance from the Tomsk signal station to remove a metal peg and proceed to the next signal station.
b) When he arrives at the next signal station, the engineer places the metal peg he got from the Tomsk signal station in the rack.
c) After this signal station has telegraphed ahead and receives clearance, the engineer is permitted to remove another metal peg and proceed.
d) However if there is a northbound train on the line, clearance to proceed is not given; the southbound train must pull into a siding until the northbound train has passed.

6. Average running time between signal points is 15-20 minutes or even 25 minutes if there is a steep grade. Therefore the length of the time after a train passed a signal point before a following train could pass this signal point would be: the running time plus signalling time of three to four minutes.

7. After a train passes a signal point, another train from the opposite direction can pass that point in the following length of time: the running time of the first train to the next signal point, plus signalling time from the second signal point to the first signal point, plus running time of the second train from second to first signal point. Therefore, on the average, the time involved would be 15-20 minutes plus three to four minutes, plus 15-20 minutes. This presumes that:

a) no steep grades are involved.

b) the second train is waiting on the siding at the second signal point.

8. From Belovo to Kuznetskiy, the line is double tracked. The block signals are hand operated semaphore signals. The shortest spacing between any two signals is 4-5 kilometers. The longest spacing between any two points is six to seven kilometers.

9. In 1935 an automatic block system between Belovo and Usyaty was proposed. The power for this system was to come from the Kemerovo power station. I do not know if this block signal system was ever installed.

10. By 1935 traffic on the Tomsk-Tel'bes line amounted to about 12 trains south and 12 trains north per day. Listed below is a breakdown of daily traffic between Belovo and Kuznetskiy for the years 1934-35. These figures refer to the number of trains going each way.

		No. of freight trains
Kuznetskiy	- Usyaty,	6-7
Usyaty	- Belovo	15-17
Belovo	- Hurievsk	2
Belovo	- Novosibirsk	4-5
Belovo	- Topki	10-12
Kemerovo	- Topki	2-3
Topki	- Taiga	2-3
Topki	- Bolotnoye	11-12

11. In addition two passenger trains from Kuznetskiy to Bolotnoye and one from Topki-Yurga-Taiga. /See Enclosure A/

12. The weights of the trains on this line are:

a) Passenger - 500 tons gross.
b) Freight with one driving locomotive 1250 tons gross/850 tons net.
c) Freight with two driving locomotives 1800 tons gross/1260 tons net. The weights of locomotives and tenders are not included in the above figures.

13. The tractive effort of locomotives in series Э, E equals approximately 18 thousand - 19 thousand kg. The weights of locomotives with tenders in these series are 130 tons for freight and 125 tons for passenger traffic.

14. If a train consists entirely of 50-60 ton capacity cars, a locomotive would pull 18 loaded cars or 50-60 empty cars. The number of cars which could be pulled is limited by the length of the sidings. /750 meters/

15. The tenders carry 8-12 tons of coal and 23 cubic meters of water. The length of a trip is from 100-130 kilometers. A locomotive pulling a 1250 ton train from Topki to Bolotnoye, a distance of approximately 130 kilometers would take on water about halfway at Yurga and would have used up about eight tons of coal upon arriving at Bolotnoye. The engineer would take on coal to replenish his supply. However, if the locomotive pulled only 500 tons, the train would not take any water at the half way point but go straight through.

16. In winter the tonnage is reduced about 75% for the locomotives. The temperatures go down to 50-60 degrees below zero Centigrade. Blizzards /purga/ rage steadily for three to five days, covering the track from three to five meters with snow. Both ordinary and propeller type snow plows are used.

17. The problem of water supply in winter is a complicated one: the stand pipe must be insulated with straw and tar and water pressure towers of the closed type have to be heated.

18. In accordance with "Technical Data for Planning and Construction of Railroad Lines", water supply points are arranged close enough together so that a train could reach the next one, if one water supply point were destroyed. To effectively tie up operations in winter, two adjacent water supply points should be destroyed.

19. The closed routes /see paragraph 2/ use mostly four axle hopper cars. These closed routes are under the jurisdiction of the Topki administration.

20. There are four thousand freight cars assigned to the Topki district, 60% of these are four axle cars, either hopper, open or covered. The allowable capacity of four axle cars is 50 tons, making a gross weight of 70-72 tons. The allowable capacity of two axle cars, is 16-20 tons, making a gross weight of 23-30 tons. The four axle cars are 10-12 meters in length and the two axle cars are eight meters in length.

21. The flat cars both two and four axle types are mostly used for transporting lumber for the mines at Kemerovo, Usyaty, Kuznetskiy, Hurievsk, Tel'bes and Temir-Tau.

22. Tank cars both two and four axle are used on the Kemerovo-Topki-Yurga lines to transport by-products from the Kemerovo coke plant.

25X1X 23. [redacted] this coke plant so these figures will be only approximately five to seven two axle tank cars and the same number of four axle cars was loaded every day.

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ENCLOSURE (A): Rough Sketch of Tomsk Railroad, not drawn to scale

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ENCLOSURE "A" - Rough Sketch of the Tomsk Railroad. Not drawn to scale.